

REMARKS

The Office Action dated March 26, 2004 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1, 2, 7 and 29 have been amended. No new matter has been added, and no new issues are raised which require further consideration and/or search. Claims 1-39 are submitted for consideration.

Claim 2 was rejected under 35 U.S.C 112, second paragraph, as being indefinite. Claim 2 has been amended to overcome this rejection.

Claims 1-6, 29-30 and 38-39 were rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 6,546,017 to Khaunte. The rejection is traversed as being based on a reference that neither teaches nor suggests the novel combination of features clearly recited in independent claims 1 and 29. Claim 1, upon which claims 2-18 depend, recites a cable modem termination system that includes a media access controller and at least one physical layer transceiver in connection with the media access controller for receiving and transmitting data. The system also includes a CPU interface configured to communicate with a CPU and a network functions module in communication with the media access controller and the CPU interface. The network function modules includes an upstream flow module for providing quality of service for upstream packet flows, a bridging and routing module for performing bridging of packets to a downstream flow

module and for routing the packets to and from a bus and the downstream flow module for providing quality of service for incoming packet flows and for wrapping outgoing packets, the downstream flow module comprising a rule module. The network functions module is configured to conduct flow management and classification functions upon packets traveling through the media access controller.

Claim 29, upon which claims 30-38 depend, recites a method for processing. The method includes the steps of receiving a packet in a media access controller and transmitting the packet to a network functions module. The method also includes the steps of providing quality of service for upstream packet flows in an upstream flow module, performing the bridging of the packet to a downstream flow module and routing the packet to and from a bus in a downstream flow module and implementing flow management and classification functions on the packet. The method further includes the steps of wrapping an outgoing packet in a downstream flow module and forwarding the packet to an appropriate destination.

As will be discussed below, the cited prior art reference of Khaunte fails to disclose or suggest the elements of any claims 1-6, 29-30 and 38-39.

Khaunte teaches a method for handling traffic in a packet switched network which supports a plurality of different service classes. The method includes the steps of receiving a first packet that is associated with a particular priority class of service at a first time and receiving a second packet that is associated with a different priority class of service at a second time. The method then calculates a priority index value for each

packet wherein the priority index value is a function of the arrival time and the priority class of each respective packet. The first and second packets are then queued in an order based on their respective priority index values. Col. 4, lines 30-34. A Cable Modem Termination System taught in Khaunte implements a physical layer, a Media Access Control (MAC) layer and a network layer. The physical layer is responsible for receiving and transmitting RF signals. Col. 10, lines 31-51. The MAC layer is responsible for coordinating channel access of multiple cable modems sharing the same cable channel and the network layer includes switching software for causing the upstream information packet to be switched to an appropriate data network interface. Col. 10, line 52-Col. 11 line 26. When a packet is received at the data network interface from an external source, the switching software within the network layer passes the packet to the MAC layer. Col. 11, lines 27-29.

Each cable modem within a particular channel is assigned a certain static priority value which represents the grade of service associated with the cable modem or subscriber. The service provider provides a number of different priority values that is equal to the number of grades of services that is supported in the system. When a bandwidth request is sent by a cable modem, the service ID of the cable modem is identified and the associated static priority value of the requesting modem's service class is determined. The grant scheduler in the system maintains a single priority queuing structure to temporarily store received bandwidth requests. Khaunte teaches that a procedure to calculate a metric is used in determining a queuing priority for the received

bandwidth requests so that a single priority queuing structure is implemented Col. 13, lines 55 - Col. 14, line 4. The bandwidth prioritization technique may be implemented in software or hardware. Col. 16, lines 50-53

Applicant submits that Khaunte fails to disclose or suggest the claimed features in each of claims 1-6, 29-30 and 38-39. Khaunte does not teach or suggest that the network functions module comprising an upstream flow module for providing quality of service for upstream packet flows, a bridging and routing module for performing bridging of packets to a downstream flow module and for routing the packets to and from a bus and the downstream flow module for providing quality of service for incoming packet flows and for wrapping outgoing packets, the downstream flow module comprising a rule module, as is now clearly recited in claims 1 and 29. Therefore, Applicant requests that the 103(a) rejection be withdrawn because Khaunte does not teach or suggest the combination of features now clearly recited in claims 1 and 29 and hence claims 2-6, 30 and 38-39 respectively.

(2) Claims 7, 8, 11-13 and 16-18 were rejected under 35 U.S.C. 103(a) as being obvious over Khaunte as applied to claim 1 and further in view of U.S. Patent No. 6,678,248 to Haddock et al. and U.S. Patent No. 6,243,360 to Basilico.

Haddock et al. teaches a flexible, policy-based mechanism for managing, monitoring and prioritizing traffic within a network and allocating bandwidth to achieve true Quality of Service (QoS). Col. 3, lines 36-39. A switch which includes a central memory, multiple ports each coupled via a channel to a filtering/forwarding engine, a

database, a memory and a CPU, may be used to implement the invention. Col. 4, lines 12-20. The filtering/forwarding engine includes an address filter which may provide bridging, routing, VLAN tagging functions and traffic classification. Col. 4, lines 28-32. Input data stream is received by a comparison engine from input switch ports and the comparison engine determines, with the help of a packet classification block, which of the previously defined traffic groups a packet in the data stream is associated. The packet classification block may employ the traffic group indications provided by the network manager to provide the comparison engine with information regarding locations and fields to be compared or ignored within the header of a received packet. Col. 6, lines 34-45. A buffer manager participates in policy based QoS by controlling the allocation of buffers within the packet memory. Col. 6, lines 63-65. The QoS category evaluation process separates the QoS queues into a plurality of categories based upon a set of bandwidth parameters. The scheduler uses the grouping provided by the QoS category evaluation process to select an appropriate QoS queue for sourcing the next packet for a particular port. Responsive to the scheduler, a dequeue block retrieves a packet from a specified QoS queue. After the packet has been transmitted, the buffer variables are updated. Col. 7, lines 44-56.

Basilico teaches a network switch coupled to a plurality of workstations for transmitting and receiving data packets or frames from a server. Col. 4, lines 17-20. A destination address locator connected to the switch includes a microprocessor coupled to a random access memory. The microprocessor stores a destination address field for a

data frame in the content addressable memory, wherein the address in the content addressable memory is used as an entry into a table look-up contained in the RAM. Col. 5, lines 8-23.

Applicant respectfully submits that neither Haddock et al. nor Basilco cures any of the deficiencies of Khaunte as discussed above with regard to claim 1. Neither Haddock et al. nor Basilco teaches the network functions module comprising an upstream flow module for providing quality of service for upstream packet flows, a bridging and routing module for performing bridging of packets to a downstream flow module and for routing the packets to and from a bus and the downstream flow module for providing quality of service for incoming packet flows and for wrapping outgoing packets, the downstream flow module comprising a rule module, as recited in claim 1 and hence claims 7, 8, 11-13 and 16-18. Furthermore, while Haddock et al. teaches an address buffer in a filtering engine which may provide bridging and routing functions, input switch ports for receiving input data and forwarding the data to a comparison engine and a random access memory, as stated in the Office Action, Haddock et al. does not disclose a content addressable memory module in communication with a bridging and routing module. The Office Action states that Basilco teaches a CAM and that it would have been obvious to combine Khaunte with Basilco and Haddock et al. to produce the claimed invention. Haddock et al. is directed to a mechanism for managing, monitoring and prioritizing traffic within a network and allocating bandwidth to achieve true Quality of Service. Basilco, on the other hand, is directed a network switch coupled to a plurality of

workstations for transmitting and receiving data packets or frames from a server. There is no teaching or suggestion in either Haddock et al. or Basilco to incorporate the CAM in Basilco with the teachings of Haddock et al. MPEP §2143.03 instructs that “[t]o establish primi facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 409 F.2d 981, 180 USPQ 580 (CCPA 1974).” Applicant submits that there is no motivation in Khaunte, Haddock et al. or Basilco to combine the CAM of Basilco with Haddock et al. and to combine the bridging and routing modules, input switch port, and random access memory of Haddock et al. with Khaunte to provide the elements of claims 7, 8, 11-13 and 16-18. Therefore, Applicant respectfully asserts that the rejection under 35 U.S.C. §103(a) should be withdrawn because neither Khaunte, Haddock et al. nor Basilco, whether taken singly or combined, teaches or suggests each feature of claim 1 and hence, dependent claim 7, 8, 11-13 and 16-18 thereon.

(3) Claim 9-10 and 14-15 were rejected under 35 U.S.C. 103(a) as being obvious over Khaunte in view of Haddock et al., Basilco and U.S. Patent No. 6,011,775 to Bonomi et al.

Bonomi et al. teaches a traffic shaper for use in a packet switched network. Col. 6, lines 43-45. Bonomi et al described a method of simultaneously reducing implementation complexity and traffic distortion by integration of a leaky bucket shaping. Col. 4, lines 23-31. However, Bonomi et al. also fails to cure any of the deficiencies of Khaunte as discussed above with regard to claim 1. Although Bonomi et

al. teaches traffic shaping by use of a leaky bucket algorithm, Bonomi et al. does not teach that network functions module comprises an upstream flow module for providing quality of service for upstream packet flows, a bridging and routing module for performing bridging of packets to a downstream flow module and for routing the packets to and from a bus and the downstream flow module for providing quality of service for including packet flows and for wrapping outgoing packets, the downstream flow module comprising a rule module as recited in claim 1 and hence claims 9-10 and 14-15. Furthermore, there is simply no motivation in Khaunte, Haddock et al. Basilco or Bonomi et al. to combine the leaky bucket algorithm of Bonomi et al with the CAM of Basilco; the bridging and routing modules, input switch port, and random access memory of Haddock et al. and the elements taught in Khaunte to provide the elements of claims 9-10 and 14-15. Therefore, Applicant respectfully asserts that the rejection under 35 U.S.C. §103(a) should be withdrawn because neither Khaunte, Haddock et al., Basilco nor Bonomi et al., whether taken singly or combined, teaches or suggests each feature of claim 1 and hence, dependent claim 9-10 and 14-15 thereon.

Applicant respectfully submits that the Office Action has pieced together four references to teach the claimed invention. However, MPEP 2143.01 instructs that “[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ 2d 1430 (Fed. Cir. 1990).” MPEP 2143.01 further instructs that “[a]lthough a prior art device ‘may be capable of being modified to run the

way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so.”” Applicant respectfully submits that the cited references do not provide such a suggestion or motivation. Applicant submits that the only motivation to piece together the four references of the Office Action is found in Applicant’s own invention. MPEP 2141, under the heading “Basic Consideration Which Apply to Obviousness Rejections,” points out that “the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention.” (See also Hodosh v. Block Drug Co., Inc. 786 F.2d 1136, 229 USPQ 182 (Fed. Cir. 1986).) The Federal Circuit has clearly held that “the motivation to combine references cannot come from the invention itself.” Heidelberger Druckmaschinen AG v. Hantscho Commercial Products, Inc., 21 F.3d 1068, 30 USPQ 2d 1377 (Fed. Cir. 1993).

In view of MPEP 2144.03, absent any teaching or suggestion in the prior art to adapt the teachings of Khaunte to meet the claimed invention, and because the rejection lacks evidence of a teaching or suggestion that the features would have been obvious to one of ordinary skill, the rejections under 35 U.S.C. §103(a) are improper.

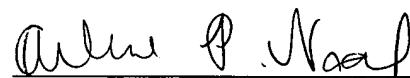
As noted previously, claims 1-39 recite subject matter which is neither disclosed nor suggested in the prior art references cited in the Office Action. It is therefore respectfully requested that all of claims 1-39 be allowed and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by

telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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